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EXAMINER	
STRZELECKA, TERESA E	

ART UNIT	PAPER NUMBER
1637	

DATE MAILED: 06/23/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/090,280	ROSIER ET AL.	
	Examiner	Art Unit	
	Teresa E Strzelecka	1637	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 April 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1 and 3-40* is/are pending in the application.

4a) Of the above claim(s) *7,21-29 and 32-40* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3-6, 8-20,30 and 31* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *20 April 2004* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. This office action is in response to an amendment filed April 20, 2004. Claims 1-40 were previously pending, with claims 7, 21-29 and 32-40 withdrawn from consideration. Applicants amended claims 1, 9 and 16 (renumbered as 15), and cancelled claim 2. Claims 1 and 3-40 are pending, with claims 7, 21-29 and 32-40 withdrawn from consideration. Applicants assert that claim 7 has been withdrawn by error. However, in the response to restriction requirement Applicants elected SEQ ID NO: 1, and claim 7 is drawn to SEQ ID NO: 35-46, therefore it does not contain SEQ ID NO: 1 and this is why it was withdrawn from consideration.

2. Applicants' amendments and arguments overcame the following rejections: rejection of claim 2 under 35 U.S.C. 101; rejection of claims 9-16 under 35 U.S.C. 112, second paragraph; rejection of claims 1-5 under 35 U.S.C. 102(b) over Pinkel et al.; rejection of claims 2, 6 and 12 under 35 U.S.C. 102(b) over Shyjan et al; rejection of claims 2, 6 and 12 under 35 U.S.C. 102(e) over Curtis et al. All other rejections are maintained for reasons given in the "Response to Arguments" section below.

3. In response to the objection to specification and drawings over missing SEQ ID Nos, Applicants amended the specification by adding missing SEQ ID Nos in paragraphs [0110], [0112], [0474] and [0477] and in Table 1 on page 63. Applicants provided a new sequence listing. These changes are accepted.

Drawings

4. The drawings were received on April 20, 2004. These drawings are objected to. Applicants submitted three pages with headings "Replacement sheet" and Figures numbered 1, 1A and 1B. The new Fig. 1 corresponds to the old Fig. 1 except it has SEQ ID NOs for the three proteins added. However, Fig. 1A and 1B are simply the same as Fig. 1, except that the sequences are on two pages,

instead of one original page. If Applicants intend to substitute Fig. 1 with Fig. 1A and 1B, only these two figures should be included as replacement sheet. The presence of essentially two copies of the same figure is confusing.

Response to Arguments

5. Applicant's arguments filed April 20, 2004 have been fully considered but they are not persuasive.

A) Regarding the rejection of claims 1-6, 8-20, 30 and 31 under 35 U.S.C. 101/112, first paragraph, Applicants argue that the invention has a specific and substantial utility as evidenced by an article of Bera et al. (PNAS, vol. 99, pp. 6997-7002, May 2002), which teaches that one of the the MRP9 (=ABCC12) transcripts is highly expressed in breast cancer cells. Applicants further argue that the specification provides a link between the ABCC12 gene and cancer, because is points to the fact that ABCC12 and ABCC5 proteins are highly related, and they are both multidrug resistance (MRP) transport proteins, and because multidrug resistance is associated with cancer, therefore ABCC12 would be associated with cancer as well.

The evidence provided by Bera et al., however, is not admissible as a proof of utility, since it was published over a year after Applicants' priority date of March 5, 2001 and about two months after the filing date of the instant Application (see MPEP 2164.05).

2164.05(a) Specification Must Be Enabling as of the Filing Date

The state of the art existing at the filing date of the application is used to determine whether a particular disclosure is enabling as of the filing date. Publications dated after the filing date providing information publicly first disclosed after the filing date generally cannot be used to show what was known at the time of filing. In re Gunn, 537 F.2d 1123, 1128, 190 USPQ 402,405-06 (CCPA 1976); In re Budnick, 537 F.2d 535, 538, 190 USPQ 422, 424 (CCPA 1976) (In general, if an applicant seeks to use a patent to prove the state of the art for the purpose of the enablement requirement, the patent must have an issue date earlier than the effective filing date of the application.).

Further, the chain of thought provided by Applicants leading from the similarity between the ABCC12 and ABCC5 proteins through multidrug resistance proteins and cancer is rather flawed. First of all, the sequence homology between ABCC5 and ABCC12 is 57%, with 47% identity (specification, Table 4). However, this does not prove that ABCC12 is a member of the multidrug resistance class of proteins, since ABCC5 has not been proven to be a multidrug resistance protein. Bera et al. do not provide any evidence that ABCC12 is indeed a multidrug resistance protein. Finally, not all proteins belonging to this family are associated with cancer. For example, the cystic fibrosis transmembrane conductance regulator (CFTR) protein and sulfonylurea receptors, SUR1 And SUR2, belong to the same family, and have no association with cancer (see, for example, Klein et al., Bioch. Bioph. Acta, vol. 1461, Table 1, and pages 251 and 252, 1999). Therefore, as of the filing date of the instant application Applicants had not proven that ABCC12 was indeed a multidrug resistance protein, and that it was in any way related to cancer.

To prove the point, two very recent reviews on the subject of the ABC family of transporters provide ample evidence that neither ABCC12 (MRP9) nor ABCC5 (MRP5) have been proven to be multidrug resistance proteins. Chan et al. (European J. Pharm. Sciences, vol. 21, pp. 25-51, January 2004), teach that ABCC5 (MRP5) does not confer resistance to anticancer agents (page 38, third paragraph), and "The involvement of MRP9 (= ABCC12) in multidrug resistance or drug transport has yet to be reported." (page 39, first paragraph). Schinkel et al. teach that MRP5 (= ABCC5) has been proven to transport anionic substances, but results considering resistance to cadmium chloride or potassium antimonyl tartrate, for example, were contradictory (page 18, second paragraph). As noted by Schinkel et al. at the beginning of that paragraph, "As for MRP4, the analysis of MRP5 is still in its infancy." Therefore, even as of January of 2004, the connection between ABCC5 and

drug resistance is at best sketchy, and the connection between ABCC12 and drug resistance nonexistent.

The rejection is maintained.

B) Regarding the rejection of claims 3-5, 8 and 10 under 35 U.S.C. 112, first paragraph, written description, Applicants argue that, according to the guidelines for examining claims for compliance with written description and Example 9, the claim to hybridization under stringent conditions satisfies written description requirement. However, Applicants missed a crucial point of the cited example. The hypothetical claim of Example 9, drawn to a nucleic acid hybridizing under stringent conditions to the complement of SEQ ID NO: 1, also includes an additional limitation of the nucleic acid encoding a protein which binds to dopamine receptor and stimulates adenylate cyclase actictivity. Therefore, this claim, in contrast to claim 5 of the instant application, contains a functional limitation which assures that the genus of nucleic acids claimed does not number in the millions of widely different nucleic acid sequences. Thus, even though Applicants described stringent hybridization conditions, the genus of possible nucleic acids hybridizing under stringent conditions to SEQ ID NO: 1 has not been described by Applicants.

The rejection is maintained.

C) Regarding the rejection of claim 5 under 35 U.S.C. 102(b) over Shyjan, Applicants argue that a fragment of 19 consecutive base pairs would not hybridize to SEQ ID NO: 1 under stringent conditions. However, the exact hybridization conditions are not limitations in this claim, and conditions provided by Applicants in the specification are examples, not definitions, of stringent hybridization conditions. Further, in paragraph [0157] on page 40, Applicants state: "The hybridization conditions described above are adapted to hybridization, under high stringency conditions, of a molecule of nucleic acid of varying length from 20 nucleotides to several hundreds

of nucleotides. It goes without saying that the hybridization conditions described above may be adjusted as a function of the length of the nucleic acid whose hybridization is sought or of the type of labeling chosen, according to techniques known to one skilled in the art. Suitable hybridization conditions may, for example, be adjusted according to the teaching contained in the manual by Hames and Higgins (1985, supra)." Therefore, it is reasonable to expect that a 19 bp fragment would hybridize to SEQ ID NO: 1 under appropriate "stringent" conditions.

The rejection is maintained.

D) Regarding the rejection of claim 5 under 35 U.S.C. 102(e) over Curtis, Applicants argue that a fragment of 31 consecutive base pairs would not hybridize to SEQ ID NO: 1 under stringent conditions. However, the exact hybridization conditions are not limitations in this claim, and conditions provided by Applicants in the specification are examples, not definitions, of stringent hybridization conditions. Further, in paragraph [0157] on page 40, Applicants state: "The hybridization conditions described above are adapted to hybridization, under high stringency conditions, of a molecule of nucleic acid of varying length from 20 nucleotides to several hundreds of nucleotides. It goes without saying that the hybridization conditions described above may be adjusted as a function of the length of the nucleic acid whose hybridization is sought or of the type of labeling chosen, according to techniques known to one skilled in the art. Suitable hybridization conditions may, for example, be adjusted according to the teaching contained in the manual by Hames and Higgins (1985, supra)." Therefore, since the fragment of Curtis is 31 bp long, and Applicants provided stringent hybridization conditions for fragments ranging in length from 20 nucleotides to several hundred nucleotides, the fragment of Curtis would definitely hybridize to SEQ ID NO: 1 under conditions described as stringent by Applicants.

The rejection is maintained.

E) Regarding the rejection of claim 10 under 35 U.S.C. 102(b) over Peng et al., Applicants argue that Peng et al. do not disclose primers which amplify SEQ ID NO: 1. However, Peng et al. teach amplification of whole genomic DNA using random hexamer primers. Since the whole genomic DNA was amplified, so was SEQ ID NO: 1.

The rejection is maintained.

Claim Rejections - 35 USC § 101

6. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

7. Claims 1, 3-6, 8-20, 30 and 31 are rejected under 35 U.S.C. 101 because the claimed invention lacks patentable utility.

8. The pending claims have been reviewed in light of the Utility Examination Guidelines and Guidelines for Examination of Patent Applications under 35 U.S.C. 112, first paragraph, "Written Description" Requirement, Federal Register, Vol. 66, No. 4, pages 1092-1111, Friday, January 5, 2001.

The examiner is using the following definitions in evaluating the claims for utility.

"Specific" - A utility that is *specific* to the subject matter claimed. This contrasts with a *general* utility that would be applicable to the broad class of the invention.

"Substantial" - A utility that defines a "real world" use. Utilities that require or constitute carrying out further research to identify or reasonably confirm a "real world" context of use are not substantial utilities.

"Credible" - Credibility is assessed from the perspective of one of ordinary skill in the art in view of the disclosure and any other evidence of record that is probative of the applicant's

assertions. That is, the assertion is an inherently unbelievable undertaking or involves implausible scientific principles.

"Well-established" - a specific, substantial, and credible utility which is well known, immediately apparent, or implied by the specification's disclosure of the properties of a material, alone or taken with the knowledge of one skilled in the art.

The current claims are drawn to a genus of nucleic acids comprising SEQ ID NO: 1, nucleic acids comprising at least eight or 15 nucleotides of SEQ ID NO: 1, nucleic acids comprising at least 80% nucleotide identity with a nucleic acid comprising SEQ ID NO: 1 or nucleic acids which hybridize under high stringency conditions with a nucleic acid comprising SEQ ID NO: 1, kits comprising such nucleic acids and methods of use of the nucleic acids.

Credible Utility

Following the requirements of the Utility Guidelines (See: Federal Register: December 21, 1999 (Volume 64, Number 244), revised guidelines for Utility.), the first inquiry is whether a credible utility is cited in the specification for use of the nucleic acids. The only cited utilities identified by the examiner are to detect the nucleic acid itself, to make primers and probes for the detection of the nucleic acids (page 10, [036]-[038]; page 11, 12). These utilities are credible.

Upon identification of credible utilities, the next issue is whether there are any well established utilities for the protein. No well established utilities for an isolated nucleic acid comprising SEQ ID NO: 1 are identified in the specification.

Substantial Utility

Given the absence of a well established utility, the next issue is whether substantial utilities are disclosed in the specification. The following evidence is presented by Applicants in the specification:

1) the polypeptide encoded by SEQ ID NO: 1, ABCC12, belongs to a family of ABC transporter proteins (page 5, [008]);

2) the ABCC12 gene was mapped to the region 16q12 on chromosome 16, which region is statistically linked with paroxysmal kinesigenic choreoathetosis (PKC) (page 6, [009], [010]);

3) PCR and database mining suggest that ABCC12 is expressed in tissues such as CNS, which is potentially involved in the etiology of PKC (page 6, [011]);

4) the cDNA with SEQ ID NO: 1, is produced in subjects not affected by disorders of paroxysmal kinesigenic choreoathetosis (page 66, [0224]);

5) topology predictions suggest that ABCC12 polypeptides are ABC transporters, with ABCC12 being 57, 48 and 49% homologous to ABCC5, ABCC1 and ABCC4, respectively (page 69, [0239], Table 4);

6) ABCC12 was mapped to the centromeric region of human chromosome 16, encompassing 5.4 cM, which could not be narrowed down further because of the lack of recombination or polymorphic markers in the region (page 120, [0449]), and the locus for PKC has been mapped to the same general region on chromosome 16 (page 121, [0450]).

None of the above evidence suggests a substantial utility for this gene. The fact that ABCC12 is homologous to some of the proteins in the ABC family, absent experimental data, does not determine its function. As shown in a recent review of ABC transporter proteins, Dean et al. (J. Lipid Res., vol. 42, pp. 1007-1017, July 2001) provides evidence that homology to the members of the ABC family does not provide one with a function for its newly discovered member. For example, ABCC1 is involved in drug resistance mechanism in the cells, since it is a multidrug resistance gene, and the protein transports glutathione conjugates of many toxic compounds (Table 1; page 1009, 7th paragraph). The ABCC4 and 5 proteins are involved in nucleoside transport, and

may play a role in cGMP secretion (Table 1; page 1009, the last paragraph). The review lists ABCC12, but does not provide any information about its function.

As far as the association with disorders is concerned, Dean et al. provide the following statement: "To date, there are a total of 14 ABC genes that are associated with genetic disorders. In fact, several ABC genes were originally identified as a result of cloning disease loci ….. The functions of ABC genes are very diverse, so it is not surprising that the diseases for which they are responsible are also diverse. In addition, ABC genes are involved in complex processes that are difficult to study. For example, despite over 7 years of research, the molecular basis of X-linked ALD is still not known. ABC genes predominantly encode structural proteins and, as a result, all of the disorders are recessive." (page 1010, third paragraph).

Applicants have not provided any evidence that ABCC12 is in any way associated with PKC. To start with, the region on chromosome 16 to which ABCC12 was mapped encompasses 5.4 cM, whereas the PKC gene has been mapped to an area encompassing about 12.4 cM (see Fig. 3, Tammur et al., Gene, vol. 273, pp. 89-96, July 2001). To provide a rough estimate of the size of these loci, the definition of a centimorgan (cM) provided on the NIH Internet side is used, which defines centimorgan as roughly equivalent to 1 million base pairs (www.genome.gov/glossary.cfm?key=centimorgan). Therefore, the ABCC12 gene, for which the mRNA is about 5,000 bp (Tammur et al., page 93, fifth paragraph), is located within roughly 12.4 million base pair fragment to which the PKC locus was mapped. Tomita et al. (Am. J. Hum. Genet., vol. 65, pp. 1688-1697, 1999) mapped the PKC locus to chromosome 16 (Fig. 3; page 1695, paragraphs 4-6). They point to several genes, known to be located in this region, as possibly being involved in the development of PKC. As stated by Tomita et al. " Some candidate genes that have been mapped either between*D16S3093* and *D16S416* or to a chromosomal region between 16p11.2

and 16q12.1 include the interleukin-4–receptor a-chain gene (*IL4R* [MIM 147781]), located between *D16S3093* and *D16S409* (Human Genome Resources); the adenylate cyclase-7 gene (*ADCY7* [MIM 600385]), located between *D16S411* and *D16S416* (Human Genome Resources); the protein phosphatase–4 catalytic subunit gene (*PPP4C* [MIM 602035]), located at 16p12-p11; and the monoamine-preferring sulfotransferase gene (*STM* [MIM 600641]), located at 16p11.2. Interleukin-4 can modulate neuronal excitability by potentiating the g-aminobutyric-acid type-Areceptor–mediated inward currents (Ro´ zsa et al. 1997), and *STM*-protein is responsible for the sulfate conjugation of monoamine neurotransmitters such as dopamine. It remains to be seen whether these genes are causally related to PKC." (page 1695, the last paragraph, continued on page 1696).

Taking into account that no further evidence was provided by the Applicants for the association between ABCC12 and PKC, an isolated nucleic acid comprising SEQ ID NO: 1 lacks substantial utility, since further experimentation would be necessary to establish such a utility.

Specific Utility

In the current case, even if the substantial utility argument above were found unpersuasive, then the specific utility of the isolated nucleic acid comprising SEQ ID NO: 1 is, at best, a relationship to an association with PKC. This utility is not specific because Tomita et al., as noted above, has identified other proteins encoded by genes within the PKS region, all of which are potentially associated with PKC. Thus, mapping of the nucleic acid comprising SEQ ID NO: 1 to the same large region as PKC does not provide a specific utility because there is no direct or even indirect connection made between any particular utility and the nucleic acid comprising SEQ ID NO: 1. As the utility guideline training materials note on page 5-6, "Similarly, a general statement of diagnostic utility, such as diagnosing an unspecified disease, would ordinarily be insufficient

absent a disclosure of what condition can be diagnosed". Here, there is no disclosure of any condition which can be diagnosed and hence, no specific utility.

Applicant should explicitly identify a specific, substantial, and credible utility for the claimed invention and establish a probative relation between any evidence of record and the originally disclosed properties of the claimed invention.

9. Claims 1-6, 8-20, 30 and 31 are also rejected under 35 U.S.C. § 112, first paragraph. Specifically, since the claimed invention is not supported by a specific, substantial, and credible utility or a well-established utility for the reasons set forth above, one skilled in the art would not know how to use the claimed invention.

Claim Rejections - 35 USC § 112

10. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

11. Claims 3-5, 8 and 10 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claim 3 is drawn to an isolated nucleic acid comprising at least 80% nucleotide identity with a nucleic acid comprising any one of SEQ ID NOS:1-32, or at least 80% nucleotide identity with a nucleic acid comprising a sequence complementary to any one of SEQ ID NOS:1-32. Claim 4 is drawn to the isolated nucleic acid according to claim 3, wherein the nucleic acid comprises at least an 85%, 90%, 95%, or 98% nucleotide identity with the nucleic acid comprising any one of SEQ ID NOS:1-32, or at least an 85%, 90%, 95%, or 98% nucleotide identity with the nucleic acid

comprising a sequence complementary to any one of SEQ ID NOS:1-32. Claim 5 is drawn to an isolated nucleic acid that hybridizes under high stringency conditions with a nucleic acid comprising any one of SEQ ID NOS:1-32, or with a nucleic acid comprising a nucleotide sequence complementary to any one of SEQ ID NOS:1-32. Claim 8 is drawn to a method for amplifying a region of nucleic acid according to claim 1, by contacting the nucleic acid with oligonucleotide primers hybridizing to positions 5' and 3' to the region to be amplified, amplifying the nucleic acid and detecting the amplified region. Claim 10 is drawn to a kit for amplifying a region of nucleic acid according to claim 1, the kit comprising two oligonucleotide primers hybridizing to positions 5' and 3' to the region to be amplified and reagents necessary for an amplification reaction. All of the above claims are considered to the extent that they read on SEQ ID NO: 1.

In analysis of the claims for compliance with the written description requirement of 35 U.S.C. 112, first paragraph, the written description guidelines note regarding genus/species situations that "Satisfactory disclosure of a ``representative number'' depends on whether one of skill in the art would recognize that the applicant was in possession of the necessary common attributes or features of the elements possessed by the members of the genus in view of the species disclosed." (See: Federal Register: December 21, 1999 (Volume 64, Number 244), revised guidelines for written description.)

All of the current claims encompass a genus of nucleic acids which are different from those disclosed in the specification. The genus includes variants for which no written description is provided in the specification. This large genus is represented in the specification by only the particularly named SEQ ID NO: 1. Thus, applicant has express possession of only one particular nucleic acid sequence, SEQ ID NO: 1, in a genus which comprises hundreds of millions of different possibilities. In addition, claims 8 and 10 encompass all possible oligonucleotides hybridizing to all

possible regions to be amplified on an isolated nucleic acid comprising SEQ ID NO: 1, which may be a whole chromosome. Here, no common element or attributes of the sequences are disclosed, not even the presence of certain domains. No structural limitations or requirements which provide guidance on the identification of sequences which meet these functional limitations is provided. Further, these claims encompass alternately spliced versions of the nucleic acids, allelic variants including insertions and mutations, and only one specific nucleic acid sequence has been provided. No written description of alleles, of upstream or downstream regions containing additional sequence, and only one splice variant has been described in the specification (SEQ ID NO: 2).

It is noted in the recently decided case The Regents of the University of California v. Eli Lilly and Co. 43 USPQ2d 1398 (Fed. Cir. 1997) decision by the CAFC that

> "A definition by function, as we have previously indicated, does not suffice to define the genus because it is only an indication of what the gene does, rather than what it is. See Fiers, 984 F.2d at 1169- 71, 25 USPQ2d at 1605- 06 (discussing Amgen). It is only a definition of a useful result rather than a definition of what achieves that result. Many such genes may achieve that result. The description requirement of the patent statute requires a description of an invention, not an indication of a result that one might achieve if one made that invention. See In re Wilder, 736 F.2d 1516, 1521, 222 USPQ 369, 372- 73 (Fed. Cir. 1984) (affirming rejection because the specification does "little more than outlin[e] goals appellants hope the claimed invention achieves and the problems the invention will hopefully ameliorate."). Accordingly, naming a type of material generally known to exist, in the absence of knowledge as to what that material consists of, is not a description of that material. "

In the current situation, the definition of the at least 80% nucleotide identity to SEQ ID NO: 1 or hybridization under high stringency conditions lack any specific structure, is precisely the situation of naming a type of material which is generally known to likely exist, but, except for the one specific sequence, is in the absence of knowledge of the material composition and fails to provide descriptive support for the generic claim to "an isolated nucleic acid comprising at least 80% nucleotide identity with a nucleic acid comprising SEQ ID NO: 1", for example.

It is noted that in Fiers v. Sugano (25 USPQ2d, 1601), the Fed. Cir. concluded that

> "...if inventor is unable to envision detailed chemical structure of DNA sequence coding for specific protein, as well as method of obtaining it, then conception is not achieved until reduction to practice has occurred, that is, until after gene has been isolated...conception of any chemical substance, requires definition of that substance other than by its functional utility."

The current situation is a definition of the compound solely but its functional utility, as a sequence with a certain degree of homology to SEQ ID NO: 1 or a sequence which hybridizes under certain conditions with SEQ ID NO: 1, without any definition of the particular sequences claimed.

In the instant application, certain specific SEQ ID NOs are described. Also, in Vas-Cath Inc. v. Mahurkar (19 USPQ2d 1111, CAFC 1991), it was concluded that:

> "...applicant must also convey, with reasonable clarity to those skilled in art, that applicant, as of filing date sought, was in possession of invention, with invention being, for purposes of "written description" inquiry, whatever is presently claimed."

In the application at the time of filing, there is no record or description which would demonstrate conception of any nucleic acids other than those expressly disclosed which comprise SEQ ID NO: 1. Therefore, the claims fail to meet the written description requirement by encompassing sequences which are not described in the specification.

Claim Rejections - 35 USC § 102

12. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

13. Claim 5 is rejected under 35 U.S.C. 102(b) as being anticipated by Shyjan (U.S. Patent No. 5,994,130).

Regarding claim 5, Shyjan teaches an isolated nucleic acid with SEQ ID NO: 1, which contains 19 consecutive nucleotides (bp 1151-1169) identical to SEQ ID NO: 1 of the instant application (see sequence alignment), therefore Shyjan teaches an isolated nucleic acid which hybridizes with SEQ ID NO: 1 (col. 5, lines 12-15).

14. Claim 5 is rejected under 35 U.S.C. 102(e) as being anticipated by Curtis (U.S. 2003/0032021).

Regarding claim 5, Curtis teaches an isolated nucleic acid with SEQ ID NO: 3, which contains 31 consecutive nucleotides (bp 1819-1849) identical to SEQ ID NO: 1 of the instant application (see sequence alignment), therefore Curtis teaches an isolated nucleic acid which hybridizes with SEQ ID NO: 1.

15. Claim 10 is rejected under 35 U.S.C. 102(b) as being anticipated over Peng et al. (J. Clin. Pathol., vol. 47, pp. 605-608, 1994).

Peng et al. teaches amplification of whole genomic DNA using random hexamer primers, which means that they were at least two primers (Abstract; page 605, fourth paragraph). The primers were obtained from Boehringer, Germany. Therefore, even though Peng et al. do not

explicitly teach a kit, the fact that they were obtained from a commercial source inherently implies that they were in a form of a kit, i.e., a container with primers included, and thus Peng et a. anticipate the limitation of claim 10.

16. No claims are allowed.

Conclusion

17. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Teresa E Strzelecka whose telephone number is (571) 272-0789. The examiner can normally be reached on M-F (8:30-5:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gary Benzion can be reached on (571) 272-0782. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

TS
June 18, 2004

JEFFREY FREDMAN
PRIMARY EXAMINER